Nutrition News

# NUTRITION AND DENTAL CARIES

JAMES H. SHAW, Ph.D.
Research Laboratories
Harvard School of Dental Medicine

The overwhelming majority of children throughout the nation have several decayed or filled teeth; too many have lost one or more of their second teeth.

There is no way the cost of tooth destruction can be expressed in terms of pain, reduced chewing ability, and disfigurement; nor to evaluate how many diseases are begun, or made worse, due to infections from decayed teeth. Methods for the repair and replacement of teeth have reached a high degree of perfection. Yet, none offers prevention of further tooth decay. Unfortunately, dental personnel in this country can take care of only 25 percent of the need for dental treatment. The wide discrepancy between damage from dental disease and the ability to repair it demonstrates the need for prevention.

### Nutrition Studies

Numerous surveys have shown a relation between qualities of food eaten and tooth decay. Indeed, careful selection of diet appears to be one of the most promising ways for prevention of tooth decay. Boyd and co-workers at the State University of Iowa observed a substantial reduction in tooth destruction in children kept under strict dietary supervision. The diet included liberal amounts of milk, cream, butter, eggs, meats, vegetables, fruits, cereals, and cod-liver oil. It was believed adequate for growth and physical well-being. In a few children, the dental condition did not improve and even became worse. Metabolic studies suggest difficulties in absorption of certain essential food constituents. When these difficulties were overcome there was less tooth decay. Dietary counseling at the Forsyth Dental Infirmary for Children also resulted in 60 to 70 percent less new decayed teeth than in children of the same age not given dietary advice. Experiments by Becks and Jensen in California showed similar striking reductions.

These data indicate diet can reduce tooth decay considerably. However, little is known of the actual mechanism by which this is accomplished. Part appears to be due to improved nutritional adequacy. However, it is not known whether some part of the reduction may have been due to establishment of an environment less suitable to development of caries. It is interesting to note that the diets in the above studies were not low in sugars and carbohydrates due to liberal amounts of fruits, vegetables, and cereals.

### Developmental Diet

The food eaten during tooth development has been found to be important for formation of teeth which will resist decay. When experimental animals are fed highly purified diets during tooth development, the teeth formed are susceptible to decay. But, when comparable animals are fed well-balanced diets of natural foods during tooth development, the teeth are damaged little by decay even when subjected to circumstances which usually result in extensive decay.

That resistance of human teeth to caries is influenced by the developmental diet is strongly suggested from surveys of over 750,000 children in Europe during the past 40 years. Toward the end of both world wars, there was substantial reduction in tooth decay. The maximum reduction was not observed until six to seven years after the start of either war. This postponement is in strong contrast to the immediate, drastic reductions in sugar, refined flour, jams, candy, etc., at the start of hostilities. Maximum change in oral environment came at the latest within the first two years of war. Yet the maximum reduction in tooth decay did not follow even reasonably closely after this drastic change. Those teeth most benefited by wartime conditions were those which began to develop after wartime diets were established. With the end

*Dr. Shaw*

of the wars, there was return toward diets with marked increase in refined foods and comparable decrease in the bulky, coarse natural foods used through the war. In other words, whatever protection was provided during development by wartime diets appears to carry over into later years even though the current diets are more comparable to previous peacetime than to war regimens.

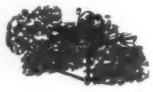
The maximum reduction in tooth decay which can be achieved in children by dietary control applied during and after tooth decay is unknown. On the basis of present knowledge, the potential reduction to be achieved by dietary control appears to be considerably in excess of that to be expected from other suggested preventive measures. However, it is impossible, at present, to list nutrients responsible for the above effects, or foods which are sources of these nutrients. Much well-controlled research with experimental animals, and later with human subjects, is still necessary before we can hope to know in detail how we can produce the best degree of prevention of tooth decay through diet.

# Glances AT NUTRITION RESEARCH

**Species variation in requirement for and utilization of nutrients creates the need for human studies. Some observations on human subjects are briefly presented here.**

**Metabolism During Weight Reduction** —Study was made of the metabolism of two groups of college women, 10 to 76 pounds overweight, while on reducing diets, deficient only in calories. One group received 60 gms. and the other 105 gms. of protein daily. The higher protein diet had greater satiety value and allowed more storage of nitrogen. Weight loss, basal metabolic rate, and calcium and phosphorus retentions were not significantly different on the two protein levels. Four subjects receiving the higher protein diet were in negative calcium balance, possibly, according to the authors, because of the lower butterfat content of the diet.

*—J. Am. Diet. Assn. 25:1012 (Dec.) 1949.*



**Child Growth Response to $B_{12}$ Therapy** —Vitamin $B_{12}$ recently has been reported to have general nutritive value to man, in addition to its effect on blood regeneration. Eleven children under care for varying degrees of malnutrition or simple growth failure were given daily an oral dose of 10 micrograms of the crystalline vitamin $B_{12}$. Five of these children responded dramatically to this single change in routine. The Wetzel grid was employed to evaluate the growth response. In addition, the vitamin had a curative effect on a case of severe allergic bronchitis.

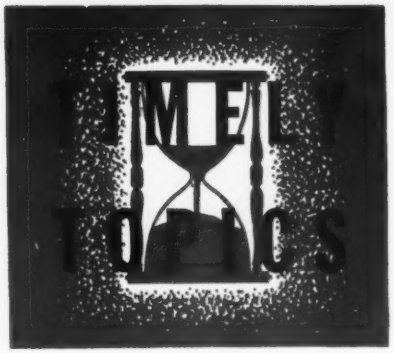
*—Science 110:651 (Dec.) 1949.*

**Milk With Breakfast** — The average daily nitrogen retention of 14 college women was improved when milk, as a source of animal protein, was served with breakfast, although the total protein intake for the day remained unaltered. When no animal protein was included with breakfast, the average daily nitrogen retention was -0.03 gm. as compared with 0.96 gm. when breakfast included milk. This simple inclusion is an easy way to increase the nutritive value of the standard American breakfast of fruit, roll, and coffee.

*—J. Nutrition 39:57 (Sept.) 1949.*

**Metabolism of Women on Cocoa Diets** —A study recently has been reported comparing the calcium utilization and nitrogen retention of college women on cocoa and non-cocoa diets. No differences were demonstrated between values for calcium balance, calcium utilization, and calcium requirements of the same subjects on the two diets, even when 34.8 gms. of cocoa were fed daily. Two levels of calcium were fed: 225 gms. and approximately 700 gms. per day. Although more nitrogen was excreted in the feces when cocoa was in the diet, the total retention of nitrogen was greater, as lower urine excretion levels were obtained.

*—J. Nutrition 39:445 (Dec.) 1949.*




Dr. Shaw has been associated with the Harvard School of Dental Medicine since 1945 as instructor and associate in nutrition and now as assistant professor of dental medicine. His research interests are investigations on the relation of nutrition to tooth development and to the susceptibility to tooth decay. Dr. Shaw is the author of a number of scientific papers in current journals of nutrition and dental research.

The Pan American Sanitary Bureau this fall established a Nutrition Institute in Guatemala for Central America and Panama City. The staff includes physicians, biochemists, parasitologist, nutritionist, and technicians. Their prime work includes analyses of composition and nutritive value of native foods, nutrition surveys, training for laboratory and field work, and special projects.

A single advisory committee on nutrition has been established to serve and coordinate the World Health Organization and the Food and Agriculture Organization of the United Nations. Included in this committee of ten are Dr. W. H. Sebrell, director of the Experimental Biology and Medicine Institute of the U. S. Public Health Service and Dr. Hazel K. Stiebeling of the Bureau of Human Nutrition and Home Economics, of the U. S. Department of Agriculture.

## GRADUATE TWENTY-FIRST CONSECUTIVE EIGHTH GRADE CLASS IN CARIES-FREE CONDITION

*By Arnold C. Erxleben, Principal, St. Paul Lutheran School*
*Melrose Park, Illinois*

Does this record seem incredible to you? It almost amazes those of us who are part and parcel of this outstanding endeavor. During the school term 1927-1928, Herman A. Voigt, then principal, initiated a school dental program in cooperation with a school nurse and a dentist. The dental correction program has been carried on through times of national prosperity, of depression, of war, and of postwar adjustment by the school without breaking down. Though there have been minor changes in procedure, the basic framework remains the same. These are its underlying principles:

1. The initial responsibility for the child's total welfare rests upon the parents.

2. The school is ready to assist the parents by coordinating and directing the varied activities necessary to insure success.

The program of dental care itself flows out of the health and safety courses which are taught in all grades from kindergarten through the eighth grade. Good living habits of personal care, nutrition, prevention of disease, safety at work and at play, structure and function of bodily organs, first aid, and the need for professional services from health departments, nurses, and doctors, are all segments of the health courses. This instruction is made realistic and functional by the school personnel. Under the Parish Board of Education the principal coordinates the work of the doctor, the dentist, the nurse, the teachers, and the referral agencies so that the parent and the child receive practical direction in matters of health, both generally and also in relation to specific individual needs.

The following gives in detail the current operation of the program:

1. In September, immediately after the opening of school, a letter explaining the need for dental care, the overall plan, and the suggestion to have the child's teeth examined and corrected at the earliest opportunity is sent to each parent.

2. Simultaneously a dental examination card is given to the pupils to be taken to the dentist when the examination is made.

3. The dentist makes the examination and records his findings.

4. Upon the completion of the necessary corrections, the dentist signs the card for return to the teacher.

5. Teacher and school nurse record these returns.

6. Pupils whose parents have failed to act are examined by the school dentist; grades seven and eight in December, kindergarten through sixth in March.

7. If defects are found the parents are notified of the same, and advised to have the family dentist make the corrections.

8. Should any parent fail in a reasonable time, the school seeks to establish the reason for non-participation.

9. When the need exists, referrals are made to relief and welfare agencies.

10. The graduation class receives a second examination about eight weeks before graduation to correct any previous omissions or new defects.

11. The classrooms from kindergarten through the seventh grade compete with one another on a percentage basis for an award to be given to the winning room on May 15. This is usually a class outing, picnic, or other social event.

### Home-School Cooperation

In this entire program the emphasis is placed on organization designed to serve the parents in helping them care for their children with the means that are normally at hand in every community. The school does not enter the field as an agency of charity, nor does it provide the professional services which normally are provided by the family dentist. It does coordinate, direct, educate, and supervise.

As is natural, a time of depression will throw a heavier load on the relief and welfare agencies, both public and private, and more referrals need to be made. During the war, a wider spacing of dental appointments was necessary to compensate for the shortage of dental surgeons in civilian practice.

Do parents of our 500 pupils like this type of a program? The answer is found in the title to this article.

## HOW ONE NUTRITION AGENCY SERVES A LARGE CITY

*by Elisabeth Whipple, Director, The Nutrition Association of Greater Cleveland*

Our niche is a city of spouting smoke stacks, boat whistles on the lake front, tree-lined streets, tiny and ugly homes, enormous and beautiful homes, parks, railroad tracks, and many handsome buildings.

The Cleveland community is a sprawling melting pot that Clevelanders love to describe as "an over-grown small town." It is a place of neighborhood councils and civic committees. Clevelanders love their city and constantly try to improve it.

This is our bailiwick, and these are the people the Nutrition Association serves. Our letterhead bears a Red Feather because we are a Community Fund supported agency.

We do not work directly with our more-than-one-million people. Public health workers, teachers, the Health Museum, librarians, newspaper columnists are our "go-betweens."

These professional cohorts use us to help them keep up to date. They use us, too, to help them make down-to-earth applications of the science of nutrition. This is a logical way of working, because people in these agencies and organizations have to know and teach many other things besides nutrition. And, to make it harder for them, nutrition grows rapidly. Its practical application has many facets. And so we work closely with them by

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## DID YOU KNOW

—that in a single school day six million half pints of milk are consumed through the School Lunch Program?

—that a new technique, "flavor profiles," evaluates and portrays pictorially flavor "notes" that comprise a flavor blend, which aids in discovering how to improve flavors?

—that about 30 percent of Denmark's export trade is butter?

—that the diet of many primitive tribes is far higher in essential vitamins and minerals than the average civilized diet, and reports show their remarkable absence of dental caries?

—that all cheese evolves gas during curing?

—that a tropical fruit, "cocona" has recently been discovered in the Amazon with berries the size of apples growing in clusters?

—that ice cream now is on the market which is packaged in cube-like individual servings?

—that, while we in America hate to grow old, in China old age is revered?

## THINGS YOU'LL LIKE TO READ

**Growing Through School Lunch Experiences**—Florida State Department of Education. Bulletin No. 33A. Florida State University, Tallahassee, Florida. 1948. 85 cents.

A group of educators aided by school lunch personnel and other specialists combined their resources to make this bulletin valuable and practical to all who work with children. It includes basic considerations of school lunches, their use in the instructional program, operation of the lunchroom, evaluation, helpful charts, and references for teacher and pupil. Its easy reading is stimulated further by case histories and pert line drawings.

**How to Write for Homemakers**—Lou Richardson and Genevieve Callahan. The Iowa State College Press, Ames, Iowa. 1949. $3.00.

Home economists and many others will find this handbook a valuable desk reference. It contributes clear and practical suggestions for putting ideas and information across effectively. Along with tips on writing for publicity, magazines, newspapers, radio, booklets, leaflets, and bulletins, are aids in preparing speeches and programs, demonstrations, recipes, films and slides, letters, memos, reports, cook books, and home economics texts. There are chapters on advertising agencies, copy editing, and proofreading; there is a section of valuable tables.

**Report of Nutrition Survey in New York**—A brief report of this survey by Ruth E. Irwin appeared in Nutrition News, December, 1948. The Journal of the American Dietetic Association now has reported more fully. The July, 1949 issue deals with "I. Nutrition Survey of Public School Children"; the August, 1949 issue deals with "II. A One-Day Study of Food Intake of Adults"; the September, 1949 issue deals with "III. A Study of One Week's Food Purchases of 135 Families."

### HOW ONE NUTRITION AGENCY SERVES A LARGE CITY

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means of group meetings, individual conferences, letters, bulletins, materials.

Requests like these shaped our program during one period last fall: "Will you talk to the staff next week on some of the new things in nutrition? May we have twelve more **Teaching Aids for Professional People**? What is the present status of enriched bread in Ohio? In our school district, what foods should be stressed most in our curriculum? Will you help us with an exhibit on **Facts and Fallacies on Minerals and Vitamins**? How do you present lessons on nutrition in the primary grades if you don't say 'These foods are good for you?' Will you sit in on a family case conference at our next staff meeting?"

#### One Demonstration Program

We feel as if we belong to the staffs of the agencies who use us. This feeling materialized into reality for one of our nutritionists. In January 1948, a member of our staff was loaned to the Cleveland Division of Health for a nutrition program within that agency. By June 1949, she had demonstrated the value of a nutritionist. The proof? The Cleveland Division of Health put its first nutritionist on its payroll.

In another city, an agency with a wide focus such as ours might also give service to social workers, small hospitals, and child-caring institutions. In Cleveland these organizations have specialists on their staffs; social work agencies employ home economists; there is a consultant dietitian for all institutions in the Welfare Federation.

Like other Community Fund agencies the Nutrition Association has a Board of Trustees. These people are leaders in the community, and many of them are on the boards and committees of other Cleveland organizations. Their interest and enthusiasm for nutrition education carries over into the other programs with which they are allied. In addition, they interpret our program to people in the community whom a nutritionist may never see.

And so nutrition education in Cleveland goes forward not only through the efforts of the staff of the Nutrition Association, but also through the efforts of the many people with whom we work.